



## ABSTRACT OF THE DISCLOSURE

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The invention relates to a system and a method of using an automated blood cell separator to prepare a high-quality hemoglobin solution as the raw material for manufacture of hemoglobin-based therapeutic oxygen carriers, so-called "blood substitutes". The method of isolating stroma-free hemoglobin comprises the steps of: separating the red blood cells from the starting solution; washing the red blood cells in wash solution; contacting the red blood cells with a hypotonic solution to produce stromata and a hemolysate containing hemoglobin having an ionic strength and separating the hemolysate from the stromata. Further, the invention relates to a method for preparing a chemically modified hemoglobin solution. This method comprises the steps of: separating the red blood cells from the starting solution; washing the red blood cells in wash solution; contacting the red blood cells with a hypotonic solution to produce stromata and a hemolysate containing hemoglobin having an ionic strength; separating the hemolysate from the stromata; and mixing the hemolysate with a reagent adapted to chemically modify the hemoglobin to form a chemically modified hemoglobin solution.

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